FUJIFILM

FUJI COMPUTED RADIOGRAPHY

FCR CARBON XL

Product Specifications

MODEL FOR THE USA

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Fuji Photo Film Co., Ltd.

Contents

1. Overview 1

2. Features 1

3. System Block Diagram 2
   3.1 Standard Configuration 2

4. System Components 3
   4.1 Standard Components 3
   4.2 Other System Components 3
   4.3 Supplies 3

5. Specifications 4
   5.1 Processing Capacity 4
   5.2 Image Reading 4
   5.3 Connection 5

6. Principles of Operation 6
   6.1 X-ray Exposure 6
   6.2 ID Entry and Exposure Condition Input 6
   6.3 Image Reading - Film Output 6

7. Power Supply Conditions 7

8. Environmental Conditions 7

9. External Dimensions and Weight 7

10. Footprint for Placement / Space Required for Maintenance 12
    10.1 Footprint for Placement 12
    10.2 Space Required for Maintenance 12

Fig. 1 FCR CARBON XL Internal Construction 9
Fig. 2 FCR CARBON XL External View 10
Fig. 3 IP Cassette type CC / type LC 11

1. Overview

The FUJI Computed Radiography FCR CARBON XL is Digital Radiography equipment that uses the Imaging Plate (IP) as the X-ray detector for reading of X-ray image information stored on the IP that has been subjected to exposure by a cassette-type exposure unit.

This equipment is used for contrast radiography, as well X-ray tomography of the urinary organ and the like, in addition to plain X-ray exposure of the chest, abdomen, bone, head and the like.

2. Features

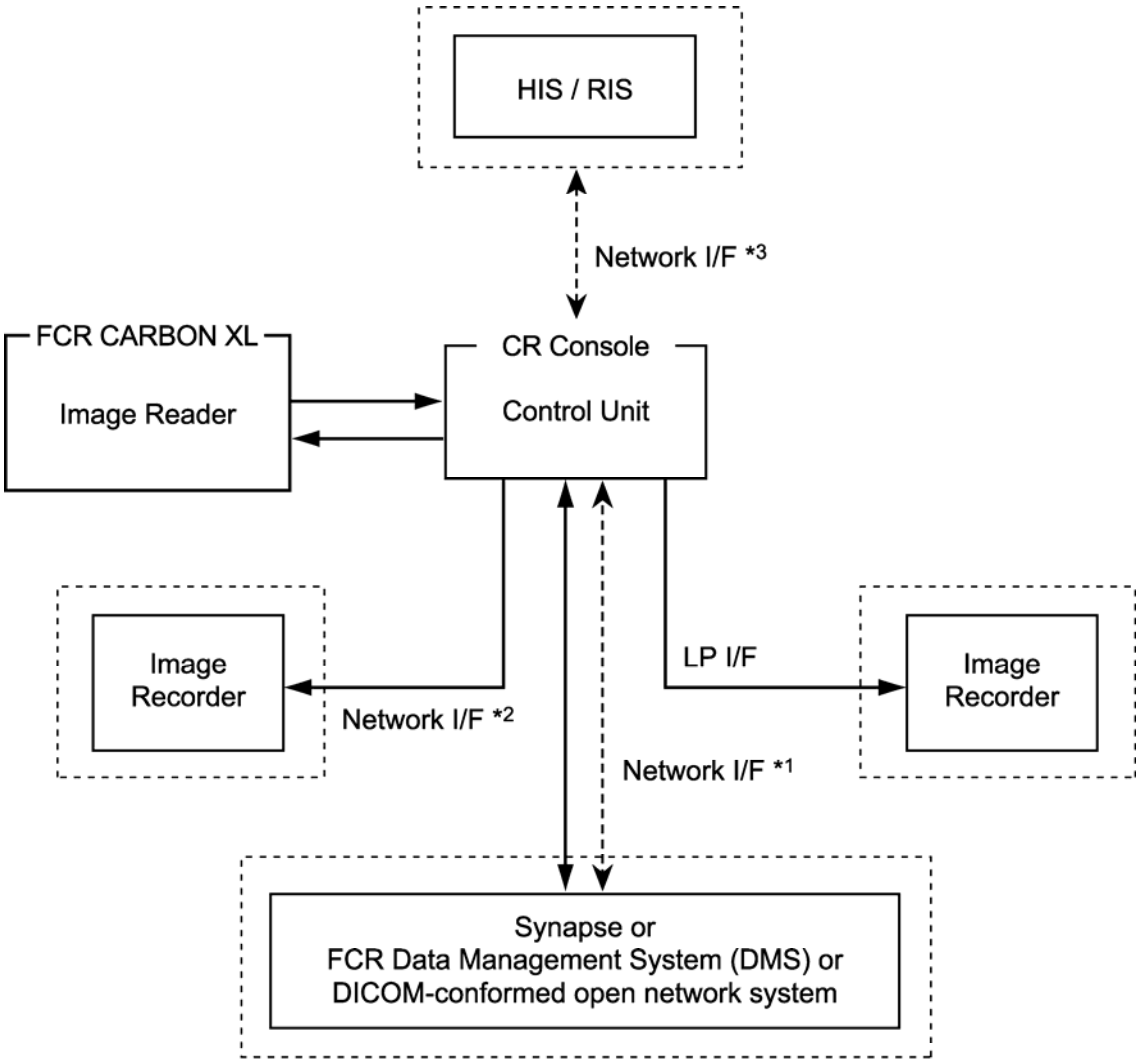
(1) Connected to the CR Console that is provided with the ID entry and QA functions, the FCR CARBON XL has been improved in terms of the system operability, economic performance and compatibility with the DICOM.

(2) Provided with the pantomography function.

(3) Adopted with a system that enables the cassette to be loaded vertically, the FCR CARBON XL requires a smaller footprint for placement, being more compact and lightweight when compared with the previous models.

3. System Block Diagram

3.1 Standard Configuration



*1: DICOM CR Storage / FINP
*2: DICOM Basic Grayscale Print Manager
*3: DICOM Modality Worklist Management / Performed Procedure Step

4. System Components

4.1 Standard Components

(1) FCR CARBON XL Image Reader (Model: CR-IR 356)

4.2 Other System Components

(1) IP cassette type CC, LC

(2) CR Console

(3) Image Recorder: DRYPIX 1000,
DRYPIX 3000, DRYPIX 7000
DRYPIX 4000, DRYPIX 5000

(4) ID Card Writer

4.3 Supplies

(1) Fuji Imaging Plate

- ST-VI (standard type)
  14"×17"(35×43cm), 14"×14"(35×35cm),
  10"×12", 8"×10", 24×30cm, 18×24cm, 15×30cm

(2) Magnetic ID Card

5. Specifications

5.1 Processing Capacity

(1) Processing Capacity

(in the high-pixel density two-image output format)

IP Type	When connected to DRYPIX 7000/ CR Console Lite
14" × 17" (35 × 43cm)	Approx. 62 (87) IPs/hr.
14" × 14" (35 × 35cm)	Approx. 70 (94) IPs/hr.
10" × 12"	Approx. 73 IPs/hr.
8" × 10"	Approx. 87 IPs/hr.
24 × 30cm (ST)	Approx. 75 IPs/hr.
18 × 24cm (ST)	Approx. 92 IPs/hr.
15 × 30cm (ST)	Approx. 73 IPs/hr.

- The time required for changing the cassette is assumed to be 0 (zero) seconds
- The time required for image erasure is assumed to be for exposure performed at 25mR of X-ray dose.
- A 100Base-TX cable is used for connection between the RU and the CR Console.

In the table above, figures between parentheses represent numbers of IPs processed at high-speed mode.

* High-speed mode is not available if this equipment is 1-to-1 connected to a CR Console without barcode reader.

(2) Film Output Time

For the DRYPIX 7000 (network connected via the CR Console):

Approx. 125 sec.

5.2 Image Reading

(1) Available IP cassette types

① Inch settings

14" × 17", 14" × 14", 10" × 12", 8" × 10", and 15 × 30cm

② Metric settings

35 × 43cm, 35 × 35cm, 24 × 30cm, 18 × 24cm, and 15 × 30cm

(2) Available IP types and sizes

① Inch settings

ST-VI (standard type)

14" × 17", 14" × 14", 10" × 12", 8" × 10", and 15 × 30cm

② Metric settings

ST-VI (standard type)

35 × 43cm, 35 × 35cm, 24 × 30 cm, 18 × 24 cm, and 15 × 30cm

(3) Time required for IP feeding/loading

- IP auto feed/load mechanism cycle time

IP Type	Required Time
14" × 17" (35 × 43cm)	Approx. 58 (41) sec.
14" × 14" (35 × 35cm)	Approx. 52 (38) sec.
10" × 12"	Approx. 49 sec.
8" × 10"	Approx. 41 sec.
24 × 30cm (ST)	Approx. 48 sec.
18 × 24cm (ST)	Approx. 39 sec.
15 × 30cm (ST)	Approx. 49 sec.

- The time required for changing the cassette is assumed to be 0 (zero) seconds
- The time required for image erasure is assumed to be for exposure performed at 25mR of X-ray dose.
- A 100Base-TX cable is used for connection between the RU and the CR Console.

In the table above, figures between parentheses represent numbers of IPs processed at high-speed mode.

(4) Reading gray scale 12 bits/pixel
Output gray scale 10 bits/pixel

(5) Output to the CR Console

Reading Size		14"×17"	14"×14"	10"×12"	8"×10"	24×30cm	18×24cm	15×30cm
High Pixel-density	Pixel Density (pixels / mm)	5	5					
	Number of Pixels	1760×2140	1760×1760					
Standard Pixel-density	Pixel Density (pixels / mm)	10	10	10	10	10	10	10
	Number of Pixels	3520×4280	3520×3520	2505×3015	2510×2000	2364×2964	2364×2964	1464x2964

5.3 Connection

- Network connection

CR Console connection 10BASE-T/100BASE-TX

6. Principles of Operation

6.1 X-ray Exposure

The IP cassette containing an erased IP is set in an X-ray exposure unit to make an exposure.

6.2 ID Entry and Exposure Condition Input

The magnetic ID card is read at the CR Console so the patient's ID information is input accordingly.
The exposure conditions, such as for anatomical regions, are selected and the barcode is read with the barcode reader.
Or above information can be received via HIS/RIS.

6.3 Image Reading - Film Output

The cassette containing the exposed IP is inserted into the cassette setting unit.

(1) The IP is taken out of the cassette automatically and irradiated with the laser beam at the image reading section. The strength of the luminescence of the radiograph on the IP is detected, converted to electric signals, and then sent to the image processing section.

(2) The reading signals undergo final image processing and are sent to the CR Console. The image will then be displayed as image signals. Modulated laser beams are then used to print these signals on film.

(3) The IP whose image signals have been read is subjected to erasure of after images at the erasure unit and returned to the cassette waiting at the cassette setting unit, making then the next exposure possible.

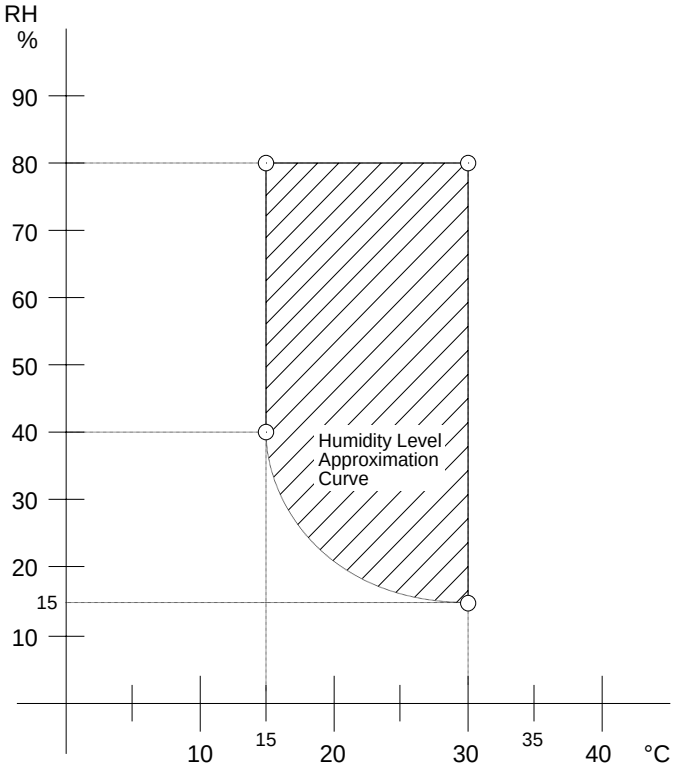
7. Power Supply Conditions

(1) Image Reader (CR-IR 356)
Single phase 50–60Hz
AC120–240V ±10%
5A (Max.)

8. Environmental Conditions

(1) Operating Conditions

Temperature	:	15 - 30°C
Humidity	:	40 - 80%RH
		(No dew condensation)
Atmospheric pressure	:	750 - 1,060hpa
Heating value	:	1.05 (MJ/h) or lower
Power consumption	:	290VA (W) or less



Temperature and Humidity Conditions

(2) Non-Operating Conditions

Temperature	:	0 - 45°C
Humidity	:	10 - 90%RH
		(No dew condensation)
Atmospheric pressure	:	750 - 1,060hpa

9. External Dimensions and Weight

Width (mm)	Depth (mm)	Height (mm)	Weight (kg)
Approx. 590	Approx. 380	Approx. 810	Approx. 98

Dimensions and weight are approximate and are subject to change without prior notice.

(Values in the table above do not include those of protrusions.)

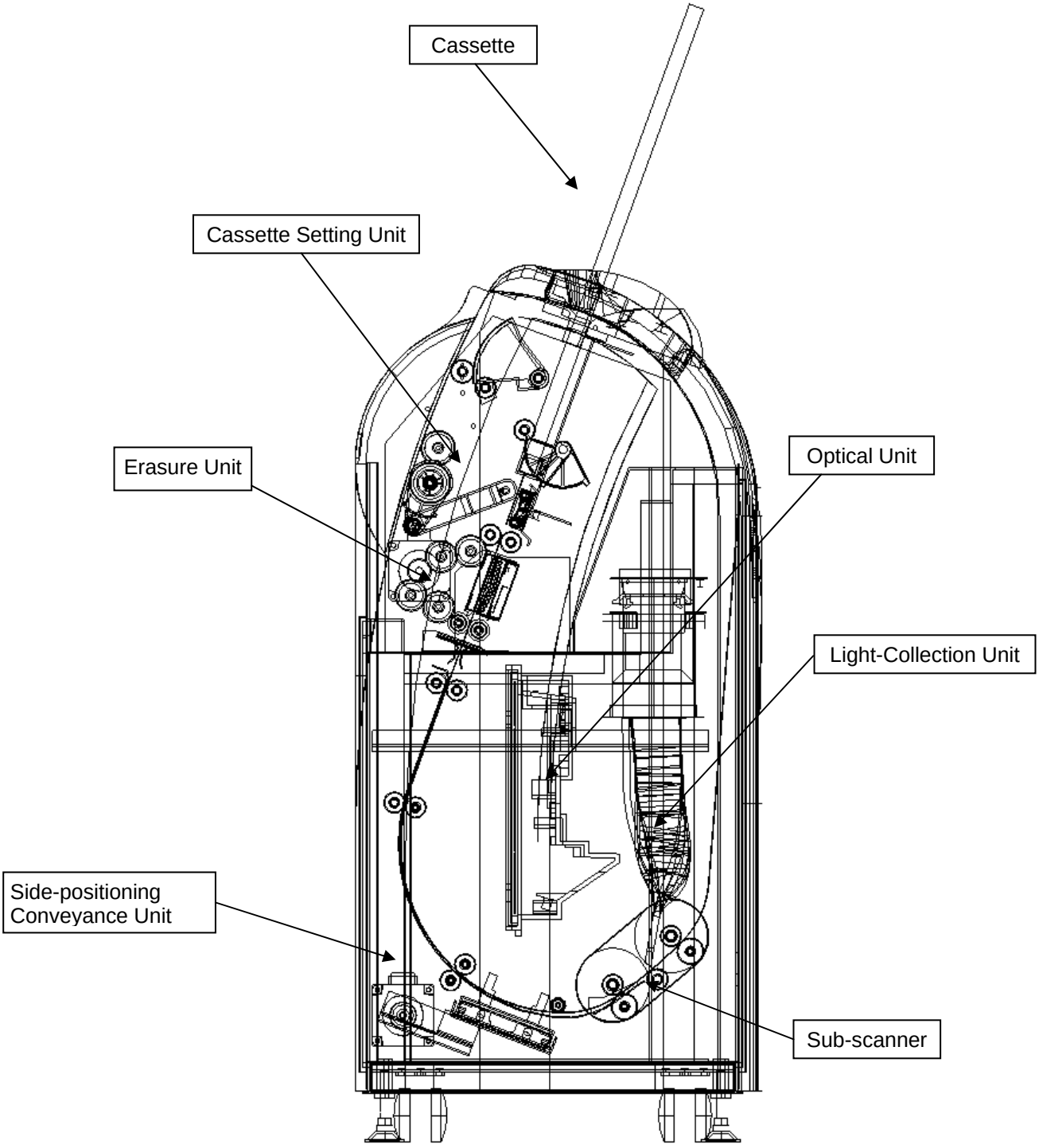


Fig. 1 FCR CARBON XL Internal Construction

(Unit: mm)

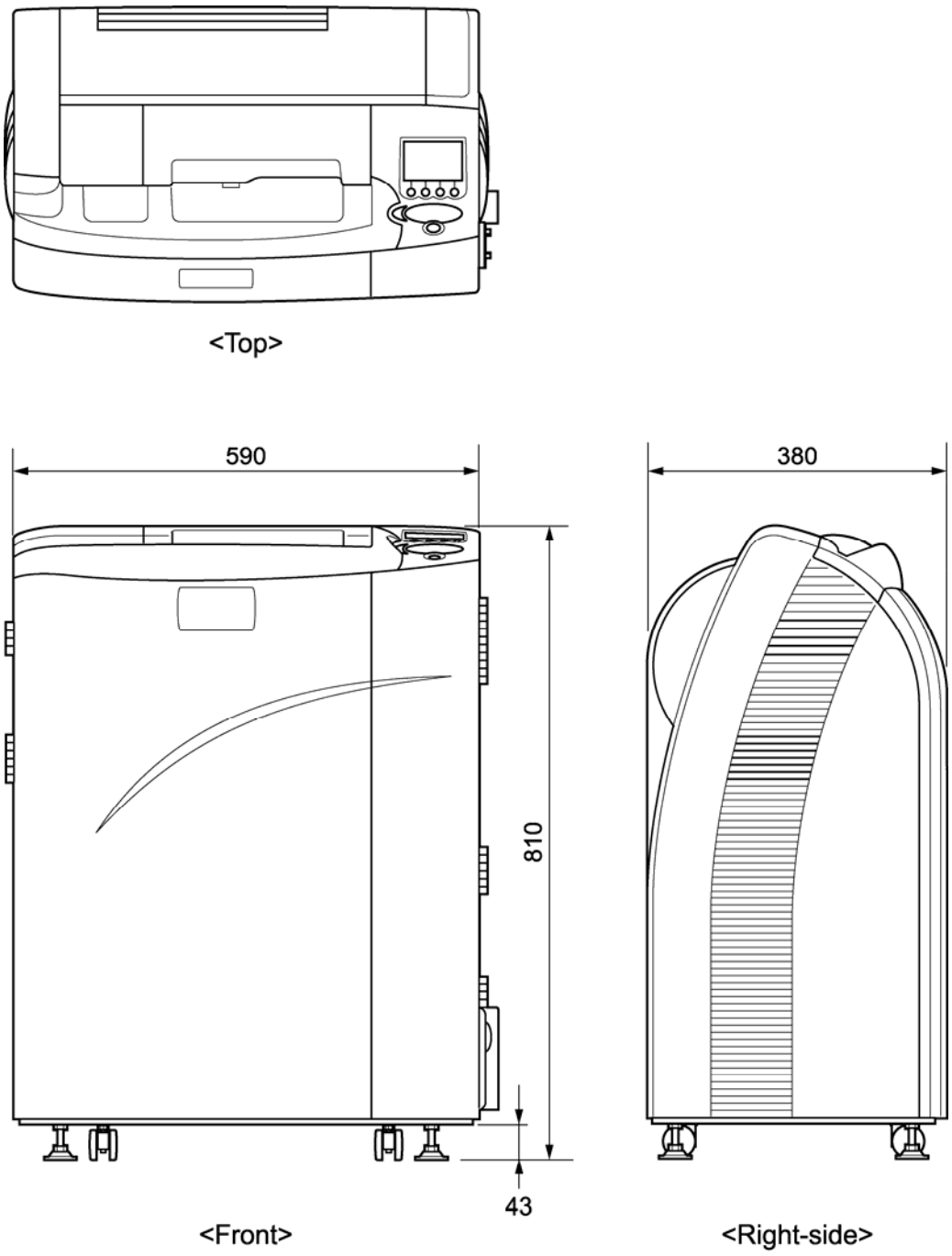


Fig. 2 FCR CARBON XL External View

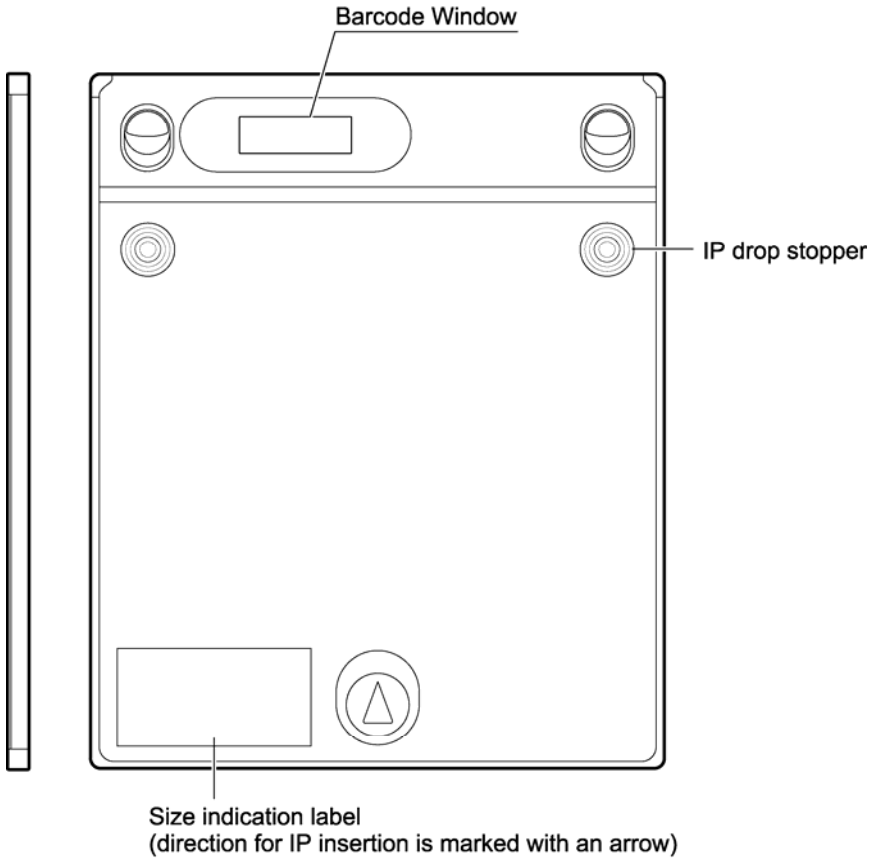


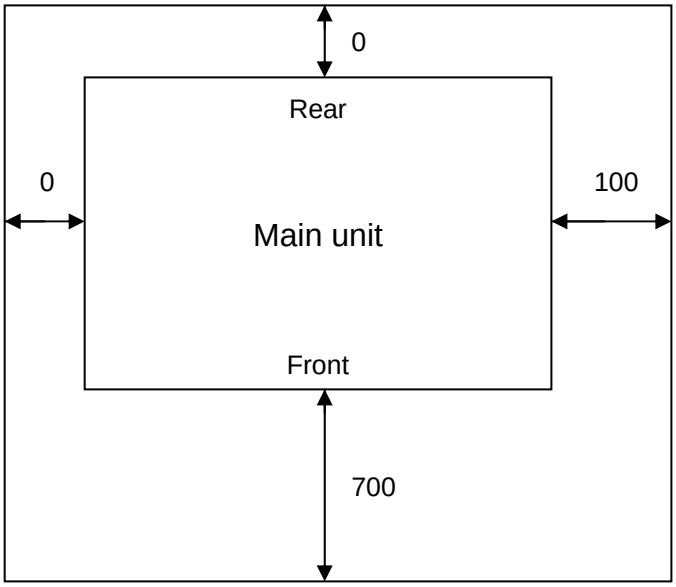
Fig. 3 IP Cassette type CC / type LC

10. Footprint for Placement / Space Required for Maintenance

10.1 Footprint for Placement

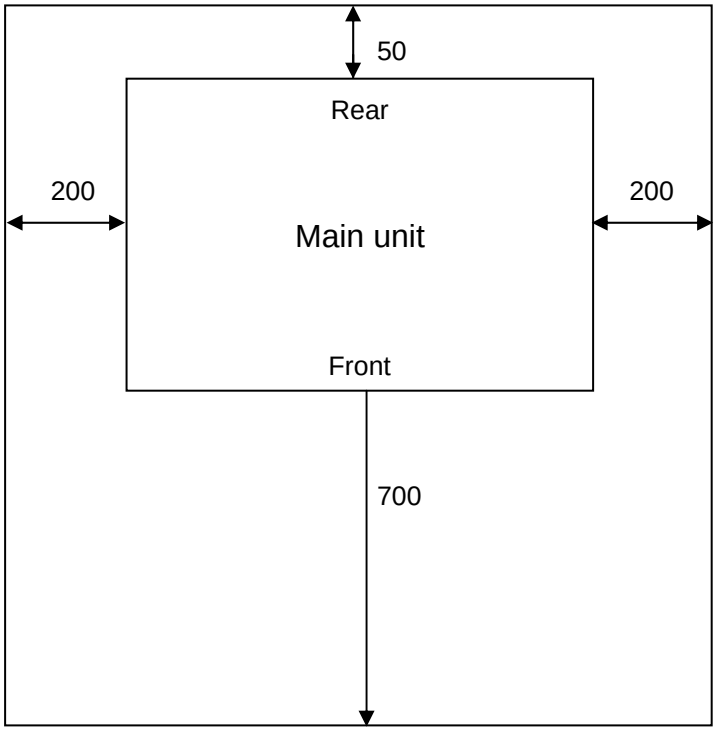
No earthquake-proof measures taken

Unit: mm



Measures taken to prevent the equipment from being toppled over

Unit: mm



10.2 Space Required for Maintenance

At least a 700mm space should be secured either in front or rear, or right or left by moving the equipment accordingly.

FUJI PHOTO FILM CO., LTD.

26-30, NISHIAZABU 2-CHOME, MINATO-KU, TOKYO 106-8620, JAPAN

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